

# Relationships Among Rates of Attrition in Training and Subsequent Attrition in Line Units

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U. S. Army

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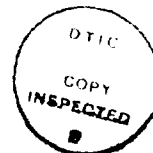
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↙ scheduled for Infantry training. In fact, attrition rates from BCT, AIT and line units were positively correlated. Analysis of these changes suggests that some as yet unspecified factor that simultaneously influenced attrition in BCT, AIT and line units outweighed training cohort factors in determining these changes in attrition.  
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Richard E. Hilligoss**

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## FOREWORD

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*2*  
This research was conducted as an in-house effort by the ARI Field Unit at Fort Benning, Georgia. The emphasis in the research on the effects of management policies on enlisted attrition is a relatively new approach to research on the Army's manpower problems. Most attrition research has focused on identification of individual characteristics related to attrition which can then be used to select personnel who will not drop out. The research approach reported here may be more relevant to the current manpower environment where there is only a small pool of people from which to select and success of the Army's mission depends on retaining those people who are recruited. These results will be of particular interest to the leadership of the Infantry Advanced Individual Training Brigade at Fort Benning and to that of other military organizations charged with the responsibility of initial training for recruits.



EDGAR M. JOHNSON  
Technical Director

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## ACKNOWLEDGMENTS

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The large contribution of LTC James R. Meyer, the Army MILPERCEN Liaison Officer to the Defense Manpower Data Center (Monterey, California), is gratefully acknowledged. LTC Meyer developed the Infantry soldier data base for the research. The research also depended on the TRADOC Data Processing Field Office at Fort Leavenworth who supported the data analyses for the research project.

# RELATIONSHIPS AMONG RATES OF ATTRITION IN TRAINING AND SUBSEQUENT ATTRITION IN LINE UNITS

## EXECUTIVE SUMMARY

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### Requirement:

This research was initiated to help understand how leadership and management practices influence the probability that a soldier will leave the Army prior to completion of his normal tour of enlistment. Although the initial emphasis was on leadership practices of training cadre, that emphasis changed to an examination of higher management policy changes and their effects on training attrition. This shift occurred when such a policy change caused attrition in a training brigade then under study to effectively disappear. The relationship between the amount of attrition in training and subsequent attrition of graduates was another major focus of the research.

### Procedure:

MILPERCEN training and separation files were obtained for all soldiers scheduled for Infantry training from January 1976 through December 1978. These data allowed the identification of all soldiers who left the service prior to completion of Basic Combat Training (BCT) or Advanced Individual Training (AIT) and at different periods following successful completion of AIT. Attrition rates for BCT, AIT and the first 90 days following AIT were examined and intercorrelated. The "constant attrition hypothesis" predicts a negative correlation between training attrition and line unit attrition. That is, there is a constant amount of unavoidable attrition to be expected from a recruit cohort of a given level of quality; therefore, low attrition during training necessarily would be followed by high attrition in line units for training graduates and high training attrition would be followed by low attrition in line units for training graduates. Correlations were calculated between training attrition and line unit attrition for monthly training cohorts to examine this constant attrition hypothesis. Correlations were also calculated between training and line unit attrition for actual calendar dates to evaluate other hypotheses for attrition changes which are not related to cohort (e.g., an Army-wide policy change).

### Findings:

The constant attrition hypothesis was not supported. Attrition in training was found to be very high for 1976 and very low in 1978. However, line unit attrition for the graduates of these training cycles did not increase when training attrition decreased. In fact, attrition rates in BCT, AIT and line units were positively correlated among each other, with attrition not only dropping in training but also dropping in line units. Although cohort

factors (selection criteria, training unit attrition policy, etc.) may have had some causal relationship to the parallel attrition changes in training and in line units, factors which have a simultaneous effect on attrition in BCT, AIT, and line units appear to be more important.

#### Utilization of Findings:

These findings suggest the possibility that early first tour attrition from the Army can be lessened by increased efforts on the part of Army leaders to develop marginal soldiers. Consequently, this report will be of interest to the leadership of all units in the Army and the other services charged with initial training and socialization of recruits.

# RELATIONSHIPS AMONG RATES OF ATTRITION IN TRAINING AND SUBSEQUENT ATTRITION IN LINE UNITS

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RELATIONSHIPS AMONG RATES OF ATTRITION  
IN TRAINING AND SUBSEQUENT ATTRITION IN LINE UNITS

INTRODUCTION

In the Summer of 1977, an ARI research effort relating leadership factors to training attrition proved impossible to carry out shortly after it was begun because attrition in the Brigade chosen for study declined sharply from prior levels. The research described in this report, in part, bears on the original "leadership factors" question. However, the primary emphasis in the current research is the effect on later attrition in line units of the reduced attrition in training units.

The earlier research project had been planned to measure the attitudes, experience, and performance of Drill Sergeants in Infantry Advanced Individual Training (AIT) at Ft. Benning, Georgia, and then to relate these Drill Sergeant characteristics to rates of attrition in the Drill Sergeants' platoons. Preliminary investigations had shown a high average attrition rate across platoons with substantial variation between platoons. This attrition changed dramatically, however, at about the time data collection was begun. In the initial battalion in which data were collected, attrition effectively disappeared. Similar drops in attrition also occurred in other training battalions of the Infantry AIT Brigade. It quickly became obvious that no correlation of Drill Sergeant characteristics with attrition would be possible because there no longer were any real differences in attrition among platoons.

The major reason for the drop in attrition that made the initial research impossible and the current project possible was the command policy established by a new Brigade Commander. The new commander instituted a policy that attrition of trainees under the Trainee Discharge Program<sup>1</sup> (TDP) was to be greatly reduced or eliminated, where possible. Training cadre, who had previously been advised to eliminate trainees who did not appear to be able to quickly learn the skills or handle the responsibilities of Infantry soldiers, were now strongly encouraged to put forth extra effort to make such trainees into good Infantrymen. Some of the training cadre believed that such "artificial" reduction in attrition during training would have the result that those soldiers, who previously would not have made it through training, would quickly become drop-outs in the line units to which they were assigned after Infantry AIT. The overall effect thus would be that no additional soldiers would be available to Infantry units, but that much additional money would be spent in

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<sup>1</sup>The Trainee Discharge Program began in September of 1973. The program was designed to expediently eliminate enlistees who appeared to have minimal potential for military service. The program aims to reduce expenditures associated with training during the early months of enlistment by processing out of the Army trainees deemed unsuitable after appropriate rehabilitary effort.

the training environment on trainee salaries, ammunition, etc. This belief that early losses reduce later losses and that reducing early losses increases later losses will be referred to as the "constant attrition hypothesis" to highlight the view that there is a constant amount of unavoidable attrition which must be expected from each training cohort of recruits at a given level of quality.

The sharp decline in attrition in Infantry AIT provided a unique opportunity to conduct research on the relationship between attrition policies and attrition rates during training and subsequent attrition of survivors of that training in their post-training assignments in line units. Limited training attrition data from the Brigade showed that attrition rates were relatively high from January 1976 to June 1977 but were low from October 1977 to December 1978 as a consequence of a gradual drop between June and October 1977. If the "constant attrition hypothesis" were valid, line unit attrition of Infantry soldiers should have been low for successful graduates of Infantry AIT during the early period when AIT attrition was high, whereas conversely, line attrition should have been much higher for successful AIT graduates during the later period when AIT attrition was low.

There are two alternative hypotheses to the "constant attrition hypothesis." One is that factors producing line unit attrition are independent of whether or not a man was "gotten rid of" or "reclaimed" in the training environment. If that were so, line unit attrition would not differ between graduates from periods of high and those from periods of low attrition in training. A second alternative hypothesis about the effect on line unit attrition of reducing training attrition is that the efforts to reclaim problem soldiers with a low probability of training success would not only "pay off" in terms of increased numbers of training graduates, but those developmental efforts would increase the ability of these marginal performance soldiers to succeed in assignments subsequent to their training. Low training attrition and low line unit attrition would go together. This research was designed to explore the validity of these competing views.

#### METHOD

From January 1976 to the present, all soldiers with Infantry MOSs (11B and 11C) have been trained at Ft. Benning, Georgia. Some training cycle data were still available at the Infantry Training Brigade at Ft. Benning for part of the period from January 1976, when Infantry AIT began, to December 1978, when Infantry AIT began to shift into Infantry One Station Unit Training (OSUT). These records were used to determine the AIT attrition rate. They were not sufficiently complete to allow the determination of attrition rates for the total three-year period, but they did seem to confirm observations from the earlier aborted research effort on the relationship of Drill Sergeant factors to attrition rates. The records show that attrition dropped dramatically during 1977.

To obtain data that would allow us to draw the total picture on Infantry AIT attrition for the period in question and to obtain attrition rates for survivors of the AIT classes in their subsequent duty stations, a series of data tapes were obtained from the Defense Manpower Data Center (DMDC) in Monterey, California. This tape file included the Training File on 57,112 soldiers who were scheduled to receive Infantry training during the period January 1976 through December 1978. In addition, separation data (date and reason for separation) were included for all personnel on the file who left the service from January 1976 through December 1979. For troops trained early in the period, these departures were most likely to occur for normal end-of-tour reasons. However, the separations that shortened normal tours were of primary interest. Although it was originally expected only to obtain data on soldiers who left the service during AIT and soldiers who left after AIT from post-AIT assignments, the data on the tape also enabled us to identify Infantry-destined soldiers who did not even make it through their Basic Combat Training (BCT).

The data tapes were mounted and analysed at the TRADOC Data Processing Field Office at Ft. Leavenworth, Kansas, from the Ft. Benning remote terminal. Personnel on the tape file with separation dates occurring prior to the scheduled graduation date of BCT were designated as BCT "attrites." Trainees with separation dates after BCT graduation, but prior to AIT graduation (projected), were designated as AIT attrites. All others separated prior to the normal end of their enlistment were "line-unit" attrites.

Line-unit attrites were categorized on the basis of the time from AIT graduation prior to separation. The AIT graduation date was actually subtracted from the separation date. Line unit attrition was then categorized as occurring in the first quarter following AIT, second quarter following AIT, etc. Particular attention was given to the first ninety days following AIT graduation since presumably this would encompass the period when "borderline" soldiers who completed AIT would be most apt to attrite.

#### RESULTS AND DISCUSSION

The data were analyzed initially by AIT cohort. Scheduled AIT graduation date (for persons leaving the service during BCT and during AIT) and actual graduation date (for persons completing AIT) determined the cohort to which a soldier belonged. Basic training attrition rate, AIT attrition rate and line unit attrition rate for the first 90 days following AIT graduation were plotted in Figure 1 as a function of the month of AIT graduation. The total number of soldiers, who entered the army with projected or actual AIT graduation dates during the month, was used to calculate the attrition rates in BCT, AIT and in line units. As a result, there are some built in dependencies in the data. For example, if everyone were to drop out in BCT, there would have to be

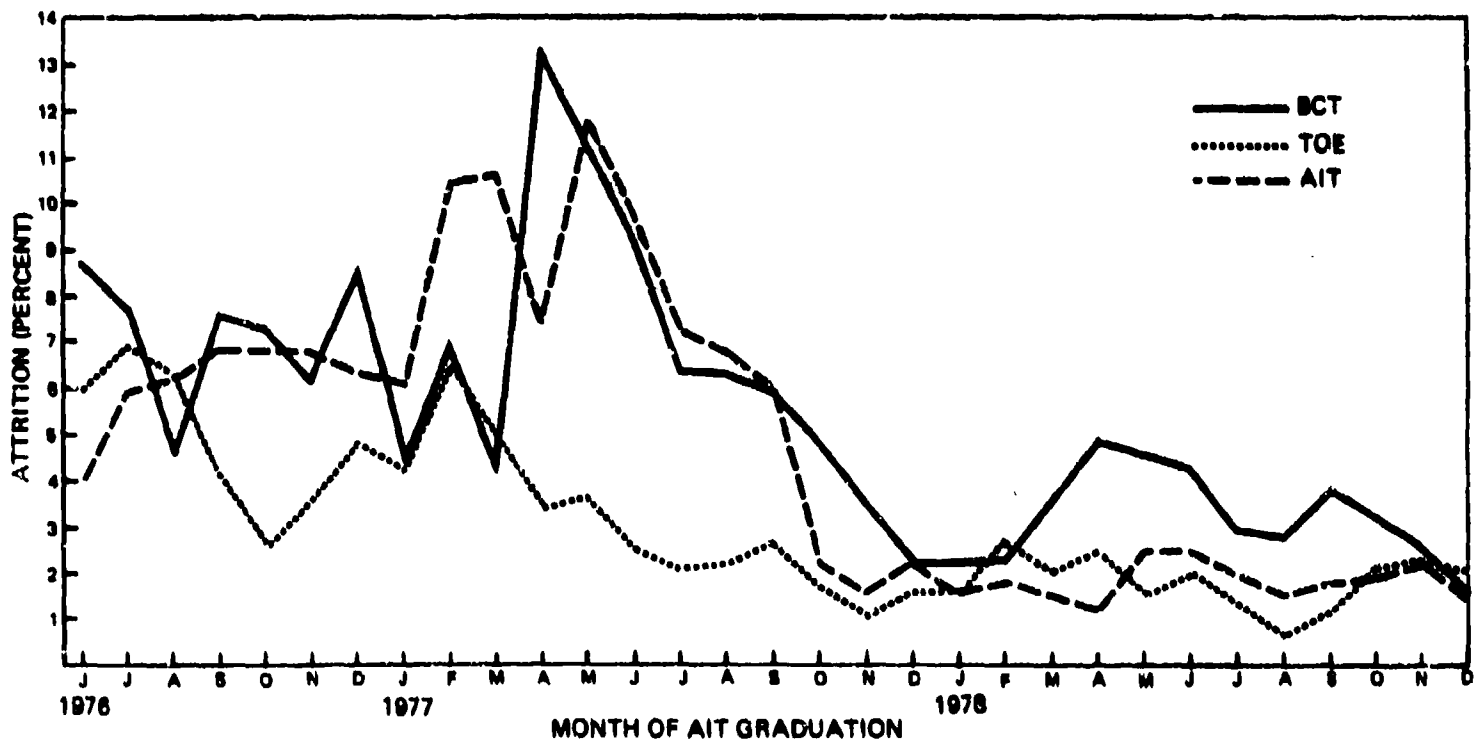


Figure 1. Relationships among rates of attrition in training (BCT and AIT) and subsequent attrition in line units (TOE) as a function of training cohort.

zero attrition in AIT and in line units. This inverse relationship among BCT, AIT and line-unit attrition would be expected to be small when attrition rates were low. However, it was recognized that this statistical artifact existed that could lead to some confirmation of the "constant attrition hypothesis," i.e., high attrition early leads to low attrition later.

Inspection of Figure 1 clearly shows a disconfirmation of the "constant attrition hypothesis." The striking decline in AIT attrition that we had noted from local data records reappeared in the DMDC data for mid-1977. However, line-unit attrition during the first 90 days following AIT and BCT attrition showed a striking decline parallel to the AIT attrition drop. The BCT attrition decline was completely unexpected. Several BCT centers provided soldiers to Infantry AIT at Ft. Benning and there was no expectation that all centers would simultaneously effect a policy such as that which had been implemented in Infantry AIT to reduce attrition.

Another way of presenting the data of Figure 1 was to calculate the product moment correlations between the different attrition rates with pairs of points determined by the month of occurrence. These correlations were all substantial and positive. Between BCT attrition and AIT attrition the correlation was .72. Between BCT attrition and first-quarter line unit attrition the correlation was .49. The correlation between AIT attrition and first quarter line unit attrition was .61. With 31 data points (months), all of these correlations are highly significant and fully one half of the variance of AIT attrition is predictable from BCT attrition.

"Clamping a lid" on training attrition in Infantry AIT certainly did not cause line unit attrition to "balloon" for AIT graduates as the "constant attrition hypothesis" would predict. Still, it was difficult to believe that the training attrition drop "caused" the line-unit attrition drop. The even stronger relationship between BCT attrition and AIT attrition also certainly did not seem to represent any causal effect of the BCT attrition drop on the AIT attrition drop.

A number of factors which might influence attrition in all three settings in the same direction were considered. For example, if the enlistment bonus increased during 1977, soldiers would be more apt to stay in the service to collect it. We quickly learned that no change in the amount of this bonus for Infantry MOSs occurred between 1976 and 1978. Another possible explanation was whether or not the economy showed a major change that would make getting out of the Army much less attractive in the period of low training and low line unit attrition. Unemployment increases did occur but not until more than a year following the striking drop in Infantry soldier attrition.

Selection factors were also considered. If the quality of the average recruit had markedly improved during 1977, this could have produced the higher success rates in training and the reduced attrition of successful trainees in line units. However, discussions with Recruiting Command personnel at Ft. Sheridan indicated that no major change in entry level standards had occurred during this period nor any change in average aptitudes of entering personnel.

While reviewing these different possible explanations for the drop in BCT, AIT, and line-unit attrition, it became evident that it might be possible to isolate the "causal" factor on the basis of the timing of the attrition. Cohort factors such as a change in selection criteria would have their effect on attrition in basic training prior to AIT and in AIT prior to line units. Non-cohort factors such as an Army-wide attrition policy change would affect all cohorts simultaneously.

Figure 1 had been plotted to examine a "cohort" explanation, namely, AIT attrition policy effects and the "constant attrition hypothesis." BCT attrition, AIT attrition and first-quarter-line-unit attrition were all plotted at the point on the horizontal axis which corresponded to the AIT graduation date (scheduled or real) of the cohort. These data were replotted in Figure 2 so that attrition rates appeared at the actual time of their occurrence. BCT attrition was moved two months to the left of its position in Figure 1 to reflect the fact that BCT and AIT start dates were separated by two months. First-quarter-line-unit attrition was moved three months to the right of its position in Figure 1 to reflect more closely the average 90-day-later date of attrition of these soldiers who had completed AIT. AIT attrition was left where it was in Figure 1. Fewer months (27) remained with complete data as a result of these shifts.

Comparison of Figure 2 with Figure 1 showed that the correspondence of changes over time in BCT, AIT and line-unit attrition was even greater in Figure 2 than in Figure 1. A quantitative check of this relationship was also made and the correlations between the attrition rates for the three locations (BCT, AIT and line unit) for both the cohort analysis of Figure 1 and the "real-time" analysis of Figure 2 are presented in Table 1. It can be seen that the large positive correlations for the cohort analysis (reported earlier) are not as large as the similar correlations for the new real-time grouping of attrition rate pairs. Real-time factors appear to be critical in producing the changes in attrition in BCT, AIT and line units although cohort factors may also contribute.

One alternative "real-time" explanation of these parallel drops in attrition in BCT, AIT and line units, which still has not been rejected, is that an Army-wide policy change on enlisted attrition was implemented in 1977 by commanders in BCT, AIT and in line units. Discussions with Department of the Army personnel have indicated that no written

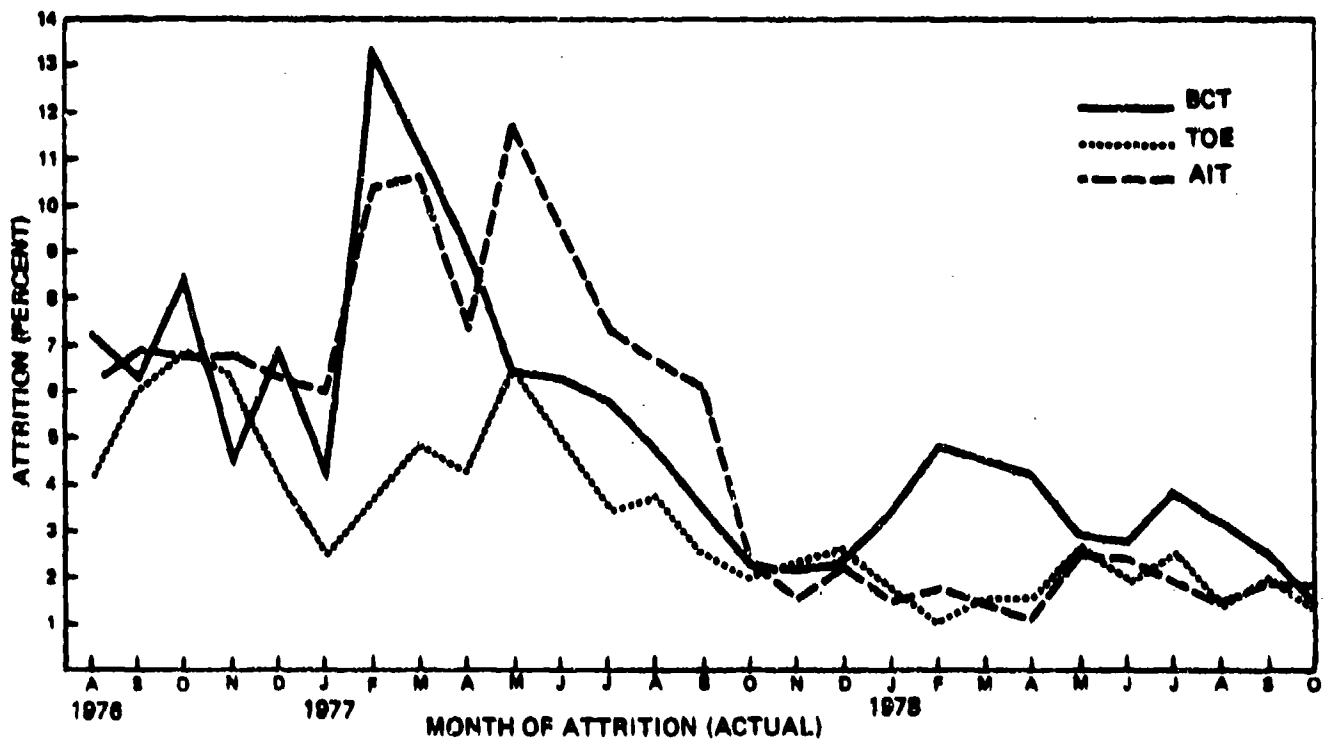


Figure 2. Relationships among rates of attrition in training (BCT and AIT) and subsequent attrition in line units (TOE) as a function of actual attrition date.

**TABLE 1**

**INTERCORRELATIONS AMONG ATTRITION RATES PER MONTH FOR INFANTRY  
SOLDIERS DURING BASIC TRAINING (BCT), ADVANCED INDIVIDUAL  
TRAINING (AIT), AND FIRST 90 DAYS IN LINE UNITS**

CORRELATION	BASIS FOR PAIRING DATA	
	TRAINING COHORT (31 months)	ACTUAL DATE OF ATTRITION (26 months)
BCT WITH AIT	.72	.78
BCT WITH FIRST 90 DAYS IN LINE UNIT	.49	.59
AIT WITH FIRST 90 DAYS IN LINE UNIT	.61	.81

regulation or order was produced for the purpose of reducing attrition. However, these discussions have not eliminated the possibility of a verbally transmitted instruction to implement such a policy of attrition reduction.

In some respects, this research raises more questions than it answers. For example, did these drops in attrition occur in MOSs other than Infantry? Did delinquency increase when attrition dropped in the training environment or in line units where these trainees were subsequently assigned? Did unit morale or unit effectiveness decline? Unfortunately, the current data file cannot provide answers to these questions. Hopefully, research personnel with access to the requisite data might address them.

Two major results of the current research do stand out, however. One is that changes in command policy on attrition can dramatically reduce the rate of attrition in training units. This "leadership factor" certainly is a potent determinant of attrition. The related second finding is that following these drops in training attrition, attrition rates do not "balloon" in the new units where the graduates of these training units with low attrition are assigned. Since these reductions in attrition are not just temporary effects, a policy to maintain low attrition in training appears to be justified.